

at least one first layer containing a unidirectional reinforced fiber, oriented by -20° to $+20^{\circ}$ with respect to a longitudinal direction of said transport member, having a tensile elasticity of 500 to 1000 GPa; and

at least one second layer containing a unidirectional reinforced fiber, oriented by $+75^{\circ}$ to $+90^{\circ}$ or -75° to -90° with respect to said longitudinal direction of said transport member, having a tensile elasticity of 200 to 400 GPa.

2. (Amended) A transport member according to claim 1, wherein said fiber-reinforced plastic further comprises at least one third layer, said at least one third layer containing a unidirectional reinforced fiber, oriented by $+30^{\circ}$ to $+60^{\circ}$ or -30° to -60° with respect to said longitudinal direction of said transport member, having a tensile elasticity of 500 to 1000 GPa.

3. (Amended) A transport member comprising skin and core layers consisting essentially of a fiber-reinforced plastic;

wherein said transport member is used for transporting an article to be transported, and

wherein said skin layer comprises at least two first layers containing a unidirectional reinforced fiber, oriented by -20° to $+20^{\circ}$ with respect to a longitudinal direction of said transport member, having a tensile elasticity of 500 to 1000 GPa.

4. (Amended) A transport member according to claim 3, wherein said core layer comprises at least two second layers containing a unidirectional reinforced fiber,

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

oriented by +75° to +90° or -75° to -90° with respect to said longitudinal direction of said transport member, having a tensile elasticity of 200 to 400 GPa; or at least one third layer containing a unidirectional reinforced fiber, oriented by +30° to +60° or -30° to -60° with respect to said longitudinal direction of said transport member, having a tensile elasticity of 500 to 1000 GPa.

5. (Amended) A transport member comprising laminated skin and core layers made of carbon-fiber reinforced plastic,

wherein said transport member is used for transporting an article to be transported, and

wherein said skin layer comprises:

a first layer containing a first carbon fiber, oriented by an angle range of -20° to +20° with respect to a longitudinal direction of said transport member, having a tensile elasticity of 500 to 1000 GPa; and

a second layer containing a second carbon fiber, oriented by an angle range of +75° to +90° or -75° to -90° with respect to said longitudinal direction, having a tensile elasticity of 200 to 400 GPa.

REMARKS

Applicant traverses the § 112, second paragraph rejection of claims 1-2, and 4-13. Applicant has amended claims 1, 2, 4, and 5 to replace the confusing phrase "and/or" with "or." The alternative fiber orientations are now set forth in definite language. With respect to the rejection of claim 2 for reciting "at least one" third layer, applicant respectfully traverses this rejection. "At least one" is not indefinite, but instead

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

is a commonly-used phrase in U.S. claim practice to introduce an element. "At least one third layer" as recited in this claim indicates that one or more third layers consisting essentially of fiber-reinforced plastic exist in the transport member. This language is not indefinite. Nevertheless, in order to clarify the Examiner's confusion, Applicant has amended claim 2 to include a comma and recite "said at least one third layer containing a unidirectional reinforced fiber"

Applicant traverses the § 103(a) rejection of claims 1-2 over Pearce in view of Krueger. In the present invention, as set forth, e.g., in claim 1, the transport member is used for transporting an article to be transported. An article to be transported can include, for example, semiconductor wafers, or the like, as disclosed e.g., at page 14, line 25 - page 15, line 8. In contrast, Pearce discloses a preform made of a dry fiber layer formed by a winding method, which is used in resin transfer molding. The Pearce preform is not suited for use as a transport member for transporting an article. Pearce offers no suggestion or motivation to modify the structure disclosed in that patent to have the features recited in the claims, because Pearce discloses a different device, used for a different purpose, in a different field of endeavor.

Krueger discloses a fiber-reinforced composite with unidirectional fiber layers. The reinforcement directions may be 0°/90°/90°/0°. Krueger teaches that an improvement in transverse strength and modulus can be attained with a non-oriented aramid spunlaced interlayer. Hence, Krueger does not suggest the fiber orientations recited in the present claims, and the teaching of a non-oriented interlayer, in fact, teaches away from the claimed fiber orientations.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Combining these references, assuming one of ordinary skill in the art would be motivated to combine them, which the applicant disputes, would not produce the present invention because the composite of Krueger cannot be formed according to Pearce's winding method.

Applicant also traverses the § 103(a) rejection of claims 3-13 over Pearce in view of JP '599. Pearce does not disclose skin or core layers having fiber orientations as recited, e.g., in claim 3 *et seq.* JP '599 teaches a multi-layer structure with 0°/90°/90°/0° reinforced directions. Neither reference discloses or suggests the claimed range of values of tensile elasticity of the skin and core layers, the claimed tensile elasticity of each layer, or the combination of layers of different orientation and elasticity as recited in these claims. Moreover, with respect, e.g., to claims 6-12, the bending elasticity, thickness, volume and bulk specific gravity of each layer, and logarithm vibration damping factor recited in these claims are neither disclosed nor suggested. In addition, as discussed above with respect to claims 1 and 2, the winding method of Pearce cannot be used to form a composite having 0°/90° unidirectional layers of JP '599, so the references are not combinable. For all of these reasons, there is no suggestion nor motivation in these two references to make the combination proposed by the Examiner, and even if these references were combined, the result does not suggest the features of the invention recited in the claims.

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of claims 1-18.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP


1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: December 9, 2002

By: 
James W. Edmondson
Reg. No. 33,871

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com